



screen built into the receiver itself. We've tested three music receivers in this review.

STAND AND DELIVER

Most of the receivers in our test are sold with server software included. If you only want to use one network media receiver, you might as well use it. Once your PC is set up to share an archive of media files, though, it's tempting to add more. Why not have a music player in the kitchen or the office as well as a video player in your lounge? Expanding your network this way is easy if you have a server that's compatible with the Universal Plug and Play (UPnP) AV standard.

UPnP is a set of standards that allows computer peripherals to connect to each other easily and without drivers. One part of the standard, UPnP AV, is designed specifically for network media receivers. If you run a UPnP-compatible server on your computer, you can connect several UPnP-compatible media receivers even if they are made by different manufacturers. The table on page 209 shows which devices are compatible with two of the most common UPnP servers, Windows Media Connect and TwonkyVision Media Server. For more information on the software servers available, see the 'Media Server Software' box on page 208.

SAFE DEPOSIT

Most home networks use wireless technology, and every home network should be secured by some sort of encryption. All the devices in this group can be connected to a wireless network using 64- or 128-bit Wired Equivalent Privacy (WEP) encryption. Sadly, few media devices can connect to networks using the stronger WPA-PSK security. If you use WPA-PSK on your network, only the expensive Squeezebox 2 music player will be able to connect.

MINE ONLINE

If you buy your music online, check carefully to see which media receivers will be able to play it. Several of the receivers in this review are capable of playing music downloaded as protected Windows Media Audio (WMA) files from services such as Napster.

Unfortunately, we don't know of any media receiver capable of playing music bought from the iTunes Music Store. If you have a large library of music bought from iTunes, the only way to share it in another room is to use the AirTunes feature built into Apple's AirPort Express, reviewed in *What's New, Shopper* December 2004.

Wireless Media Players

If you want to enjoy all the video and music on your PC wherever you are in the house, you need to invest in a wireless media player. We review a selection of receivers designed to help you play away

Ten years ago the average PC was used to store office documents. Nowadays, the chances are your PC is packed full of music, video files and digital photos. This is great, but it does cause problems; most of us want to watch videos and listen to music in our living room, but we leave our computers in another room. So this month, we've tested seven ways to bring your media files back to the front room.



CHOOSING A... WIRELESS PLAYER

To watch and listen to media files in another room, you need three things. First you need a home network (see page 216). This can use wired or wireless technology. If you already have broadband internet that you share wirelessly, you can use the same network to send and receive media files.

Next you need to install some software on the PC that contains your music, photo and video files. This acts as a server, indexing your files and sending them out when requested. Finally, you need a

network media receiver. This sits in your living room and allows you to browse through your files using a remote control. Once you've selected a file, the receiver plays it through your television or stereo system.

MEDIA FRENZY

Most network media receivers fall into one of two categories. Some allow you to play music, video and photo files. These connect to your television, and allow you to select files using a remote control and onscreen menus. Most of these have no screen of their own, so to choose music files you'll have to turn on your TV. The Philips Streamium SL400i is an exception: it uses your TV in the usual way, but it also has a small LCD display. We've tested four of these multimedia receivers this month.

The second type of network media receiver is more specialised and can play only music files. These tend to be smaller, and connect to your stereo amplifier using a standard set of RCA phono leads or a digital S/PDIF. You can select tracks to play using a remote control and menus on a small

IN THIS REVIEW

MULTIMEDIA PLAYERS

D-Link DSM-320

Philips Streamium SL400i

Pinnacle ShowCenter 200

Sony VGP-MR100U

MUSIC PLAYERS

Netgear MP101

Roku SoundBridge M1000

Slim Devices Squeezebox 2

MEDIA SERVER SOFTWARE

iTunes

Slimserver

TwonkyVision

Windows Media Connect



REVIEW MULTIMEDIA PLAYER

D-LINK
DSM-320

RATING ★★★★★

PRICE £95 inc VAT

SUPPLIER www.wehavethings.comDETAILS www.dlink.co.uk

D-Link's DSM-320 is a large, smart silver box. It's the right width and depth to fit into a hi-fi separates system, but not very tall. Its wireless aerial is on the back, but it can be detached and replaced with a bigger one if necessary. It takes an age to start up, but once it's running the menus are pleasant to use from a distance, with large and clear fonts.

D-Link's server software installed easily, but we were unable to locate the server from the player itself. This could have been a huge problem, but fortunately the DSM-320 works with Microsoft's Windows Media Connect server, which can be downloaded for free. Using Windows Media Connect also allows you to play audio files bought from services such as Napster.

The player displayed our test photos without a hitch. It played MPEG1 and MPEG2 videos with no trouble, but can't play WMV videos. It plays DIVX.AVI files, but our high-quality TV test played poorly, with stuttering sound and jerky playback. If you want to watch high-quality DivX videos over a wireless network, the Philips and Pinnacle players are better. Once registered with live365.com, you can listen to internet radio with your PC turned off.

Those who want to watch WMV or high-quality DivX files should look elsewhere, but otherwise this is a great player. It's the cheapest device for playing back songs bought from online stores such as Napster, and a decent way to view photos and video files on your TV.

✓ Affordable; plays protected WMA music

✗ Has difficulty with DivX videos

SPECIFICATIONS Supports MP3, WMA, Protected WMA (Napster), JPEG, MPEG1/2, DIVX.AVI

REVIEW MULTIMEDIA PLAYER

PINNACLE
ShowCenter 200

RATING ★★★★★

PRICE £162 inc VAT

SUPPLIER www.savastore.comDETAILS www.pinnaclesys.com

Pinnacle's ShowCenter is the size of a DVD player, but its gaudy logo and lights make it look a bit cheap. A look on the back panel shows its serious side, though: it has just about every kind of video and audio output (see table).

The server software included takes ages to install, but works fine. It's worth downloading Microsoft's Windows Media Connect, though, as the two servers integrate together, allowing you to play protected WMA music files. There's no internet radio support, but we were able to play Ogg Vorbis music files using TwonkyVision's UPnP server. The device couldn't display our TIFF photograph, but it does show JPEG and GIF images.

The ShowCenter is the best device in this group for streaming video files. It's the only device here that can play Windows Media WMV videos. It can also play High Definition files through its component video output. Like the Philips SL400i, it displayed our high-resolution DIVX.AVI test with only minor glitches.

The ShowCenter interface isn't as slick as the one used by the Philips and Sony players, but it is acceptable. It has some clever functions, too. If you add a Pinnacle TV tuner to your server PC, it can be controlled from the ShowCenter.

The ShowCenter may not have the prettiest box or the best designed menu system, but it can play almost any media file available. If you want a device to play audio, photos and video files, this is the one to buy.

✓ Plays almost every kind of video file, including HD

✗ Interface is a little clunky

SPECIFICATIONS Supports MP3, WMA, Protected WMA (Napster), JPEG, MPEG1/2, WMV, DIVX.AVI

REVIEW MULTIMEDIA PLAYER

PHILIPS
Streamium
SL400i

RATING ★★★

PRICE £162 inc VAT

SUPPLIER www.dabs.comDETAILS www.streamium.com

The Streamium SL400i is enormous. Its case has clearly been designed to look like a hi-fi tuner or amplifier, but it dwarfed our test DVD player and VCR. Its wireless network aerial is hidden away inside and cannot be replaced.

The SL400 has a small screen, so you can select music files without turning on your TV. This works, but the screen is extremely dim. The remote control supplied is almost as unnecessarily big as the player itself, but works well enough. Philips also includes a media server utility for your PC, which is simple to use, and a USB wireless network adaptor for your PC.

The SL400i has two modes: Internet and PC Link. In PC Link mode, it plays files from your PC: MP3 and WMA audio and JPEG images are supported, as well as MPEG and DIVX.AVI video. The menus are easy to use, and it warns you if your network isn't fast enough to stream high-quality video files. It played our test TV show encoded in DivX well, with only minor pauses.

In Internet mode, you can listen to internet radio without your PC. Philips also provides online movie trailers and music videos. Video quality from the internet isn't brilliant, though, and you'll need a good broadband connection.

The SL400i has some unique features and is easy to use. Pinnacle's ShowCenter 200 plays more files, though, and costs the same.

✓ Very easy to use; clever internet functions

✗ Enormous; limited file compatibility

SPECIFICATIONS Supports MP3, WMA, JPEG, MPEG1/2, DIVX.AVI

REVIEW MULTIMEDIA PLAYER

SONY
VGP-MR100U

RATING ★★

PRICE £140 inc VAT

SUPPLIER www.sonymstyle.co.ukDETAILS www.sony.co.uk

Unlike most manufacturers, who seem determined to pack tiny electronic devices into huge plastic cases full of air, Sony has made its media receiver tiny. The VGP-MR100U isn't much bigger than the Squeezebox 2 music player, but it can also display video and image files. Unfortunately, its wireless network aerial cannot be detached or replaced with a high-gain model.

Sony supplies no software with its receiver. Instead, it is designed to work with the proprietary VAIO software installed on Sony PCs, and also with UPnP-compatible servers. It worked happily with both the TwonkyVision UPnP server and Microsoft's Windows Media Connect.

The VGP-MR100U's interface puts most other video-capable players to shame. It looks great, and is easy to use. The remote control is huge, especially compared to the receiver, but it has a good layout and responsive buttons.

Unfortunately, the range of files supported is limited. It plays MP3 music, but it cannot play any kind of WMA music file, with or without protection. Similarly, it can display JPEG images but not TIFF or GIF files. It refused to play most of our video files; only MPEG1 and MPEG2 files are supported.

This inability to play even common file formats makes the VGP-MR100U undesirable. Unless you own a VAIO computer and only want to play MP3 and MPEG files, there's little reason to choose this over the cheaper alternatives.

✓ Neat design; excellent interface

✗ Extremely limited file support

SPECIFICATIONS Supports MP3, JPEG, MPEG1/2



REVIEW MUSIC PLAYER

NETGEAR
MP101

RATING ★★★★★

PRICE £75 inc VAT

SUPPLIER www.savastore.comDETAILS www.netgear.co.uk

We first reviewed Netgear's MP101 in *What's New, Shopper* July 2004. It was the first media receiver we tested to make playing MP3s on a hi-fi system easy, and it won our Best Buy award. Sadly it's being discontinued, but if you're quick you can buy one of the last units for under £80.

Like many players in this group, the MP101 is a lot larger than it needs to be; inside its box is a small circuit board and a lot of air. Its design looks a bit old-fashioned, but it's far from ugly. Its wireless aerial cannot be replaced with a larger one, and it has no digital audio outputs.

The MP101 plays MP3 and WMA files, but it doesn't work with the protected WMA files sold by services such as Napster. It comes with a simple server application for your PC, which allows you to designate music folders and manage the list of internet radio stations. It also works with Microsoft's Windows Media Connect server and the TwonkyVision UPnP server.

Choosing tracks is easy. The MP101 has a small but clear white-on-black LCD display and a pleasantly small remote control. The remote control has a volume control, but this affects only the headphone socket; the RCA Phono sound output is always at line-level.

The MP101 is limited by its inability to play protected WMA files, but it's small, simple to use and very affordable. If you only want to play MP3 or WMA music, grab one while you can.

✓ Inexpensive way to stream MP3 and WMA music

✗ Can't play protected WMA music; might be hard to buy

SPECIFICATIONS Supports MP3, WMA

REVIEW MUSIC PLAYER

ROKU
SoundBridge M1000

RATING ★★★★★

PRICE £187 inc VAT

SUPPLIER www.rokulabs.co.ukDETAILS www.rokulabs.com

Roku's SoundBridge is the most stylish media receiver in this test by some margin. Its case is an aluminium tube, which feels as solid as it looks, and it has a bright green-on-black display.

One end of the SoundBridge conceals a CompactFlash 802.11b wireless network card and an Ethernet connector. Under the other cap, there's just room for a power connector and analogue and digital audio outputs. A stand is provided to stop it rolling away from your stereo.

The SoundBridge doesn't include any server software. Instead, it's designed to work with several different servers, so you can pick the one that best suits your needs. Most users will like the simplicity of playing MP3s using iTunes, but you can also use a UPnP music server to play MP3 and WMA music. If you buy music online from a store such as Napster, you can use Windows Media Connect and play back the files you buy wirelessly.

When we last tested the SoundBridge it didn't work properly with the SlimServer server software. This has since been rectified, so those who want to play music encoded using Ogg Vorbis or FLAC can do so. You can listen to ShoutCast internet radio without turning on your server PC.

The SoundBridge is easy to control using its remote, and you can increase the font size to make choosing songs from a distance easier. It's the most universal music player here, and is the best if you buy WMA music online.

✓ Plays almost every kind of music file, including protected WMA

✗ Well over twice the price of the MP101

SPECIFICATIONS Supports MP3, WMA, Protected WMA (Napster)

REVIEW MUSIC PLAYER

SLIM DEVICES
Squeezebox 2

RATING ★★

PRICE £200 inc VAT

SUPPLIER www.amp3.co.ukDETAILS www.slimdevices.com

It might not be made of metal like Roku's SoundBridge, but the Squeezebox 2 still looks expensive. Its small plastic case tapers away from the huge green-on-black display on the front to the connectors at the back.

Unlike every other player in this group, the Squeezebox works only with one server. This SlimServer software isn't included in the box but is free to download, and versions are available for Mac and Linux computers. We always prefer devices to support UPnP servers, as it allows you to connect different players to one library. Annoyingly, the Squeezebox can't play protected WMA music files; this is a disappointing limitation for a £200 device.

This annoyance aside, the Squeezebox is easy to use. It's easy to browse for music, and the player supports most formats including Ogg Vorbis and FLAC. The SlimNetwork function allows you to connect to online resources such as internet radio, RSS news feeds, live music recordings and, bizarrely, recorded nature sounds. After falling asleep to the sound of waves, you can also use the Squeezebox as an alarm clock.

Unfortunately, these functions come at a price; the Squeezebox 2 costs a whopping £200. The Roku SoundBridge can play protected files, connect to almost any server, has a similarly flashy design and costs £25 less. Unless you're a fan of SlimServer or listening to nature, you can buy better.

✓ Streams most music files; display looks excellent

✗ Requires SlimServer; doesn't play protected WMAs; expensive

SPECIFICATIONS Supports MP3, WMA

MEDIA SERVER SOFTWARE

Most media receivers here include a software utility to manage and share your music, image and video files. If this software doesn't run on your PC, or you don't like the way it works, there are several alternatives. The table opposite shows which servers are supported by each device.

WINDOWS MEDIA CONNECT

Windows Media Connect only works on computers running Windows XP. It's free to download from Microsoft's website and has one huge advantage over other servers: it can stream protected WMA audio files to compatible players. If you buy music from a service such as Napster, this is the one to use.

TWONKYVISION

The TwonkyVision UPnP Media Server costs €15 (around £11) from www.twonkyvision.de. It can't stream protected audio files, but can handle most other music, image or video files. It's small, customisable and runs on Windows, Mac and Linux computers. We explained how to install the server on a LinkStation network storage device in *Linux Expert, Shopper* October 2005. Only the XP version of Windows is officially supported, but it works on several older versions too, including Windows 98. If you want to customise a server to stream to several different devices, this is a great choice.

ITUNES

Roku's SoundBridge can stream music using the music-sharing feature built into Apple's iTunes software. It cannot, however, share music bought from the iTunes Music Store.

SLIMSERVER

SlimServer is the only server supported by the Squeezebox 2, and older versions are also compatible with Roku's SoundBridge. It's free to download from www.slimdevices.com. This is the server to pick if you have a Squeezebox, or if you want to stream Ogg or FLAC audio to a SoundBridge.



MULTIMEDIA PLAYERS

MUSIC PLAYERS

MANUFACTURER	D-LINK	PHILIPS	PINNACLE	SONY	NETGEAR	ROKU	SLIM DEVICES
Model	DSM-320	Streamium SL400i	ShowCenter 200	VGP-MR100U	MP101	SoundBridge M1000	Squeezebox 2
Rating	★★★★	★★★	★★★★★	★★	★★★★★	★★★★★	★★
AUDIO COMPATIBILITY							
MP3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WMA	Yes	Yes	Yes	No	Yes	Yes	Yes
WMA (Napster)	Yes*	No	Yes**	No	No	Yes (WMC)	No
Ogg	No	No	Partial***	No	No	Yes (SlimServer)	Yes
FLAC	No	No	No	No	No	Yes (SlimServer)	Yes
Internet radio/without PC	Yes/Yes	Yes/Yes	No/No	No/No	Yes/No	Yes/Yes	Yes/Yes
IMAGE COMPATIBILITY							
JPEG	Yes	Yes	Yes	Yes	N/A	N/A	N/A
TIFF	Yes	No	No	No	N/A	N/A	N/A
GIF	Yes	No	Yes	No	N/A	N/A	N/A
VIDEO COMPATIBILITY							
MPEG1	Yes	Yes	Yes	Yes	N/A	N/A	N/A
MPEG2	Yes	Yes	Yes	Yes	N/A	N/A	N/A
WMV	No	No	Yes	No	N/A	N/A	N/A
WMV-HD	No	No	Yes	No	N/A	N/A	N/A
DIVX.AVI	Yes	Yes	Yes (v3,4,5)	No	N/A	N/A	N/A
Extras		Watch film clips from internet; USB wireless adaptor included	USB connector; integrates with Pinnacle TV cards				Natural sound feeds, RSS news ticker
NETWORK INTERFACES							
Wireless standard	802.11g	802.11g	802.11g	802.11g	802.11b	802.11b	802.11g
Ethernet standard	10/100 Ethernet	10/100 Ethernet	10/100 Ethernet	10/100 Ethernet	10/100 Ethernet	10/100 Ethernet	10/100 Ethernet
Wireless encryption	128-bit WEP	128-bit WEP	128-bit WEP	128-bit WEP	128-bit WEP	128-bit WEP	128-bit WEP, WPA-PSK
AV INTERFACES							
Audio outputs	Stereo RCA Phono, optical and coaxial S/PDIF	Stereo RCA Phono, coaxial S/PDIF	2x Stereo RCA Phono, optical and coaxial S/PDIF	Stereo RCA Photo, optical S/PDIF	Stereo RCA Phono, headphone	Stereo RCA Phono, optical and coaxial S/PDIF	Stereo RCA Phono, optical and coaxial S/PDIF, headphone
Video outputs	SCART, S-video, composite video	2x SCART	SCART, S-video, component video, composite video	S-video, composite video, component video	N/A	N/A	N/A
SERVER COMPATIBILITY							
Server software included	D-Link Media Server	Philips Media Manager	ShowCenter	None	Netgear Media Server	None	SlimServer 6 via download
UPnP (TwonkyVision)	Yes	Yes	Yes	Yes	Yes	Yes	No
Windows Media Connect	Yes	Yes	Yes	Yes	Yes	Yes	No
iTunes	No	No	No	No	No	Yes	No
SlimServer	No	No	No	No	No	Version 5 only	Yes
Minimum system requirements	Windows 98, 500MHz processor, 128MB RAM, 20MB hard disk space	Windows 98 SE, Pentium III processor, 64MB RAM, 50MB hard disk space	Windows 2000SP2, 1GHz Pentium III processor, 256MB RAM, 10GB hard disk space	N/A (no software included)	Windows 98, 500MHz processor, 120MB RAM, 20MB hard disk space	N/A (no software included)	Windows NT, 128MB RAM, 20MB hard disk space
BUYING INFORMATION							
Price inc VAT	£95	£162	£162	£140	£75	£187	£200
Supplier	www.wehavethings.com	www.dabs.com	www.savastore.com	www.sonystyle.co.uk	www.savastore.com	www.rokulabs.co.uk	www.amp3.co.uk

*Requires WMC **Requires WMC and Pinnacle servers ***Works with TwonkyVision

HOW WE TESTED

We tested all the media receivers in this labs on the same 802.11g wireless home network, using 128-bit wired equivalent privacy (WEP) encryption and Internet Protocol (IP) addresses allocated by the Dynamic Host Configuration Protocol (DHCP). The network was connected to a cable broadband internet connection. A server PC was placed at one end of the property, and the media receivers were tested at the other.

The music players were attached to a hi-fi stereo system. Each was tested with sample music encoded using MP3, WMA, OGG and FLAC encryption. We also tested protected WMA music from the Napster To Go service.

The video devices were tested with the same audio files, then with images saved as JPEG, GIF and TIFF files. Finally, we tested with video files encoded as Windows Media WMV, MPEG1, MPEG2 and DIVX.AVI. The table shows which devices could play these various formats.

We also tested each device with several different server programs to see which were most compatible. We used SlimServer 5.4 and 6.1, iTunes, TwonkyVision Media Server and Microsoft's Windows Media Connect.

LABS VERDICT
WIRELESS MEDIA PLAYERS

Most of the wireless media players in this group test exceeded our expectations. Whether you want to play your MP3 collection through your stereo system or watch compressed video files and photos on your TV, you're sure to find a device here to suit you.

If you only want to play music files, there are two stand-out options. Roku's SoundBridge M1000 is a brilliant combination of style and function; it looks great, and plays just about any kind of music file, including those bought online. It wins our Best Buy award, but at £187 it's a serious investment. If you only want to stream MP3 or WMA music, Netgear's MP101 is brilliant value at just £75, and wins our Best Budget Buy

award. Unfortunately it's being discontinued, though, so grab one while you can.

Similarly, there are two impressive choices for those who want to view photos and videos on their TV. D-Link's DSM-320, which costs under £100, works well with music, including protected files, photos and videos, and it wins a Best Budget Buy award. Its one weakness is DivX playback: if you want to watch DIVX.AVI video files, it's not such a good choice. If you can stretch to £162, you should choose Pinnacle's ShowCenter 200, which plays protected music files, images and DIVX.AVI video, supports High Definition files and can even integrate with Pinnacle TV tuners. This player wins our Best Buy award. **CS**

MULTIMEDIA PLAYER	MULTIMEDIA PLAYER	MUSIC PLAYER	MUSIC PLAYER
PINNACLE ShowCenter 200	D-LINK DSM-320	ROKU SoundBridge M1000	NETGEAR MP101
			